

## EPILEPSY.\*

BY L. W. BAKER, M. D.,

SUPERINTENDENT OF A HOSPITAL FOR EPILEPTIC CHILDREN, BALDWINVILLE, MASS.

**I**N this disease the autopsy and the microscope have afforded us but little satisfaction. There seems to be no fixed and constant pathological lesion attendant upon the wide assemblage of symptoms classified under the name of epilepsy. The few histological changes which have been reported are, it seems to me, to be considered results rather than causes of the disturbance.

But if our knowledge concerning the actual pathological changes occurring in epilepsy is vague and unsatisfactory, experiment and clinical observations have yielded most valuable results. The researches of Ferrier, Hitzig, and Luys concerning the functions of the brain have been rich in suggestion, while the labors of J. Hughlings-Jackson, Gowers, and others have, within a few years, furnished us with a more satisfactory explanation of the phenomena of this disease than any we have heretofore possessed.

According to the views of these observers, an epileptic paroxysm arises from a sudden and excessive functional activity of the gray matter in some portion of the brain. This rapid action of certain nerve centres, with its resulting phenomena, is called a "discharge," which may commence in any part of the gray matter of the brain, remain confined to the portion in which it originated, or may extend to and involve other portions; hence the wide variety of manifestations which constitute an attack. There may be, for example, a momentary loss of consciousness, a slight incoherence, or

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\* Read before the New England Psychological Society, Dec. 9, 1884.

mental blank, without muscular spasm, or the attacks may be of a convulsive character, involving few or many muscles; auræ of the greatest variety may be present, or the patient may have no warning whatever of an approaching seizure, while not infrequently the attacks are preceded or followed by more or less mental excitement. Dr. Jackson even goes so far as to say that "epilepsy is not a particular grouping of symptoms occurring occasionally; it is a name for any sort of nervous symptoms or group of symptoms occurring occasionally from local discharges; whether the discharge puts muscles in movement or not—that is, whether there be a convulsion or not,—matters nothing for the definition. A paroxysm of subjective sensation of smell is an epilepsy as much as is a paroxysm of convulsions; each is the result of sudden local discharge of gray matter."

This rapid liberation of energy in the nervous centres, giving rise to an epileptic paroxysm, may be due either to a sudden diminution of inhibitory power, or to an excessive and rapid generation of nerve force within the cells affected. It is, however, important to remember, that the primary and essential element in the production of a "discharge" is the presence of an inherent instability of certain portions of the gray matter within the encephalon, which may be due to heredity or other predisposing causes, some of which are beyond our power of detection; just what constitutes this instability we are unable to say, but some form of impaired nutrition probably plays an important part in its production. "The real cause of the disease," says Gowers, "is the morbid state of the nervous system, the existence of which is only revealed by the immediate excitant of the first fit. Nevertheless, since the occurrence of one fit undoubtedly facilitates the occurrence of others, we must regard the excitant of the first fit as, to some extent, the cause of the other fits—*i. e.*, of the whole developed disease. Without that cause, the disease might have remained for ever latent."

The fundamental element in the production of convulsive disorders is an unstable condition of certain cerebral areas, which may be induced or maintained by various causes, and which varies greatly in different individuals. The feeble

powers of control possessed by the brain during childhood, and which is influenced more or less by heredity, explains the readiness with which convulsive attacks are induced during this period of life from comparatively trivial exciting causes. These attacks, if allowed to continue, are liable to develop later into confirmed epilepsy. Bearing in mind, then, the instability of certain cerebral cells as the primary cause of the paroxysm, we can understand that an epileptic or epileptiform seizure is induced by various exciting causes. These have been classified by Reynolds as: 1. Pyschical—such as fright, grief, worry, or overwork. 2. Eccentric irritation—dentition, indigestion, dysentery, etc. 3. General organic changes—fatigue, pregnancy, miscarriages, rheumatic fever, scarlet-fever, diphtheria, pneumonia. 4. Physical influences—blows on the head, falls, cuts.

In many instances no exciting cause can be detected, and in all cases of chronic convulsive disease it is important to discriminate, if possible, between those cases in which the attacks are symptomatic, the result of some organic lesion or traumatism, either central or eccentric, and those cases which are simply the manifestation of a morbid constitution of the brain unaccompanied by any anatomical change. In the first instance, the attacks may resemble epilepsy; they may be epileptiform, but they are not epileptic. It would, I think, be a great advantage if the term epilepsy could be limited to those cases in which the disease is a pure neurosis. This, however, is not always possible to do.

The symptoms of epilepsy are, as you well know, usually classified into two divisions, according to their degree of severity: the major attacks, characterized by loss of consciousness and severe muscular spasm; and the minor form, in which there is nearly always loss of consciousness, with or without slight spasm. Between these two types of the disease there may be a very great variety of symptoms. In many instances the attacks are preceded by an aura which is usually referred to the periphery, and which was formerly considered an excitant of the epileptic paroxysm. In the vast majority of cases, however, the aura is now considered to be the first manifestation of the discharge,

which may be followed by other characteristic phenomena. Occasionally the aura is the only manifestation of an attack, the paroxysm being arrested before it is fully developed. By considering the mode of commencement of an attack we may gain valuable information concerning the region of the brain which is first affected by the discharge.

In certain cases a constantly acting peripheral irritation may induce a convulsive habit in the brain centres, which may even continue after the removal of the exciting cause. Yet this irritation has no necessary and constant relation to the phenomena which constitute the discharge. Uterine or ovarian disease, for example, may, in an unstable nervous organism, induce an epileptiform attack, the aura of which may be disordered vision or a sensation referred to the right arm. Here the exciting cause evidently resides in the uterus or ovaries. The manifestations of the discharge, however, are referred to another portion of the body. An aura indicates the commencement of an epileptic attack; it is not the cause of the paroxysm.

One of the saddest features of this disease is the mental deterioration or derangement which is frequently found associated with it. The tendency to mental failure is greatest in those cases which commence in early childhood, and it is also more or less influenced by the duration of the disease. "When epilepsy has lasted a long time," remarks Boileau de Castelnau, "one must expect to see it ending in enfeeblement of the intelligence and of mobility. The younger the individual at the commencement of epilepsy, the more mental alienation is to be dreaded." "Mental failure," says Ecchiverria, "has been evident in 374 of the 532 epileptics whose history I have analyzed, or in 70.3 %. Of this latter number 26 % exhibited attacks of mania lasting from a few minutes to several days or weeks. One hundred and thirty-three, or a little over one fourth of the whole number, were subject to periodical fits of cerebral or larvated epilepsy, alternating with or supplementing the convulsive attacks." These sudden attacks of mania occurring in an epileptic, and during which he may do violence to others, are of very

great medico-legal importance, for many terrible crimes have been committed, and many strange and otherwise unaccountable acts performed, by persons suffering from this form of periodical insanity.

The exhibitions of mental derangement may precede or follow an epileptic seizure; they may also take the place of an attack. In this event the discharge is mental rather than motor; there is a convulsion of ideas rather than a convulsion of muscles.

"The sudden maniacal paroxysm in an epileptic case," says Gray, "is often merely a substitute for a fit," and yet it is not impossible that these attacks of mental epilepsy may have been preceded by a slight nocturnal attack, or by a scarcely noticeable minor seizure. For, remarks Ecchiverria: "How easily the silent nocturnal paroxysms are overlooked is as much illustrated by ordinary as by criminal cases. Their diagnosis therefore demands the nicest discrimination, for no kind of epilepsy is more liable than this to originate mental derangement with impulsive criminal acts. \* \* \*

"The mental phenomena of masked or cerebral epilepsy recur with the periodicity peculiar to the other epileptic paroxysms. They supervene after a more or less prolonged stage of incubation, and though acknowledging the same source and nature as the attacks which they substitute, they exhibit, however, a much longer duration, seldom lasting less than a day and often persisting for two or three."

One case which came under my observation exhibited the peculiarity of convulsions alternating with mental excitement in a marked degree, and I have now under treatment a young gentleman, eighteen years of age, who has had severe epileptic attacks since he was two years of age. When first I saw him, Feb. 9, 1884, he had on an average at least two attacks daily. Previous attempts at treatment had failed on account of the mental derangement which was sure to follow the cessation of the attacks. I placed him under suitable treatment, the attacks at once ceased, and he has been entirely free from them since March 26, 1884. Mental excitement, however, soon appeared, accompanied by sleeplessness and by the most violent exhibitions of

temper and intolerance of any attempts at control; the slightest irritation was sufficient to excite a paroxysm of noisy rage. Still adhering to the original plan of treatment, to allay the muscular convulsive tendency, which has been pursued without the omission of a single dose, I combined with it treatment intended to allay the tremendous mental convulsion under which he was suffering. A few months' perseverance on this line accomplished the desired result, and at the present time he has been entirely free from mental excitement for several months, eats and sleeps well, and performs his ordinary duties. This I believe is a well-marked case of mental epilepsy following the cessation of the convulsive attacks.

In regard to the treatment of epilepsy, I believe that the results are not so discouraging as some writers would have us suppose. There can be no question, however, that the earlier treatment can be commenced, the better the prognosis. It is also important to remember that treatment to be successful should be continued for a long time after the cessation of the attacks. Herein is where so many fail. Long freedom from attacks begets the opinion in the mind of the patient, that the disease is fully cured; the treatment is consequently discontinued, with the frequent result of allowing the seizures to return, and the ground must all be gone over again, with the added difficulty of controlling the epileptic tendency which has been permitted to again assert itself. The importance of long-continued treatment of this disease cannot be overestimated, and in the severer forms the best results will be accomplished if the patient can be cared for in an institution devoted especially to this class of cases, for in this way only can we secure the administration of the proper remedies with unfailing regularity, while at the same time we provide for the proper care of the patient, should he be subject to attacks of mental derangement. Unfortunately our present facilities for the care of this special class are not the best, for, as a rule, the only provision now made for epileptics is in hospitals for the insane, and as the classification in these institutions is generally made with refer-

ence to the patient's mental condition, rather than to the accompanying epilepsy, it is evident that an insane asylum is not the most suitable place for these cases. The insane ought never to witness the wild contortions and terrible struggles of an epileptic seizure, and it is also an injustice to confine an epileptic, who may be insane only during the paroxysms, with lunatics; for, during their freedom from attacks, these patients resent the companionship of the insane. For such cases needing asylum care, separate institutions should be provided.

Epilepsy is a distinct disease, and should be treated apart from hospitals for the insane.

But however desirable it may be that special institutions should be provided for the care and treatment of epileptics, many cases will still come under our observation for whom treatment must be provided outside of such institutions, and I desire here to protest against the opinion, held by many, that epilepsy is an incurable disease, and consequently that treatment is of little avail.

The results of my experience distinctly contradict this view. Many cases of epilepsy I believe are curable, while in many more the frequency as well as the severity of the attacks may be greatly diminished by suitable treatment; even if we accomplish nothing more than this, are we not doing a great deal for the comfort of our patients? Is not the habit of taking medicine, even for years, preferable to the continuance of the epileptic habit?

What form of treatment will remove an aortic obstruction, or restore lung tissue in the later stage of phthisis to a perfectly healthy condition? Yet who will maintain that in them, as well as in many other chronic affections, medical care is of no value.

Dr. Powers, of London, who has had a great experience in the treatment of epileptics, gives the results of his treatment in 562 cases. Of these the epileptic attacks ceased in 241 cases while under treatment. In 266 cases improvement short of arrest was obtained, the fits being reduced to  $\frac{1}{20}$ ,  $\frac{1}{30}$ ,  $\frac{1}{50}$ , and even to  $\frac{1}{100}$  of their frequency and severity. In 55 cases but little or no improvement.

Dr. Hughes Bennett, physician to the Hospital for Epilepsy and Paralysis, Regent's Park, presented a report on the 7th of June, 1879, of 41 cases treated during the previous six months, which demonstrated the remarkable influence of treatment upon epileptic attacks. In 22% the paroxysms were completely checked during the whole time of treatment. In 92% the seizures were either entirely arrested during the observation, or greatly modified in frequency and severity.

Of the cases which have come under my own observation during the past two years, the results of treatment have been very satisfactory, either in securing complete arrest or in a diminution of the epileptic paroxysm.

The introduction of the bromides marks an epoch in the treatment of epilepsy, but the routine administration of these or any other remedies, without an intelligent study of the peculiarities of each case, will often result only in disappointment. Convulsive attacks, as we have already seen, may depend upon various exciting causes, which may be either central or eccentric in their origin. Not unfrequently the convulsion will be found to depend upon some irritation in the periphery, as a congenital phimosis, an injured nerve, or indigestion; in this event, our attention must first be directed toward the removal of the exciting cause. Should the convulsion be central in its origin, it may depend upon a variety of causes, which must be separately investigated before the disease can be treated intelligently. "In no disease," says Dr. Pepper, "is routine less permissible, and in no disease is attention to hygienic and general influences more essential. In each case the treatment should be adapted to the special peculiarity: to the character of the primary cause, if such cause be discovered; and to the character of the provoking cause, if it can be detected."